

# 呂世源 教授

## SHIH-YUAN LU, PROFESSOR

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### 主要研究領域

#### ▪ 奈米材料與結構

我們的研究興趣在於奈米材料與結構之製備、檢測與應用。我們以多種不同的方式（氣相沉積、電化學沉積、溶凝膠、水熱法、熱溶劑法等）將各式物質（半導體、金屬、陶瓷及高分子）以多種形式（介孔、線、棒、管、粒子、陣列及複材）製備出來，並討論它們在光催化分解水產氫、太陽能電池、超級電容器、感測、光觸媒等之應用。

### Main Research Interests

#### ▪ Nanomaterials and nanostructures

We are interested in nanomaterials and nanostructures of a wide variety of substances (semiconductors, metals, ceramics, and polymers) in a wide range of form (mesoporous, wire, rod, tube, particle, array and composite) prepared via a number of different routes (vapor deposition, electrochemical deposition, sol-gel, hydrothermal, solvothermal, etc.) for potential applications in photoelectrochemical/photocatalytic water splitting, solar cells, supercapacitors, sensor, and photocatalysts.

### 代表作 (Selected Publications)

- Ji-Yuan Liang, Chun-Chieh Wang, **Shih-Yuan Lu\***, "Glucose-derived Nitrogen-doped Hierarchical Hollow Nest-like Carbon with a Novel Template-free Method as an Outstanding Electrode Material for Supercapacitors," *J. Mater. Chem. A*, **3**(48), 24453, 2015.
- Tsung-Hsuan Yu, Wei-Yun Cheng, Kang-Ju Chao, **Shih-Yuan Lu\***, "ZnFe<sub>2</sub>O<sub>4</sub> decorated CdS Nanorods as a Highly Efficient, Visible Light Responsive, Photochemically Stable, Magnetically Recyclable Photocatalyst for Hydrogen Generation," *Nanoscale*, **5**(16), 7356, 2013.
- Hsing-Chi Chien, Wei-Yun Cheng, Yong-Hui Wang, **Shih-Yuan Lu\***, "Ultrahigh Specific Capacitances for Supercapacitors achieved by Nickel Cobaltite/Carbon Aerogel Composites," *Adv. Func. Mater.*, **22**(23), 5038, 2012.
- Wei-Yung Cheng, Juti Rani Deka, Yi-Chun Chiang, Antoine Rogeau, **Shih-Yuan Lu\***, "A one-step, surfactant-free hydrothermal method for syntheses of mesoporous TiO<sub>2</sub> nanoparticle aggregates and their applications in high efficiency dye-sensitized solar cells," *Chem. Mater.*, **24**(16), 3255, 2012.
- Kuan-Ting Lee, **Shih-Yuan Lu\***, "Porous FTO Thin Layers Created with a Novel Sn<sup>4+</sup>-based Anodic Deposition Process and their Potential Applications in Ion Sensing," *J. Mater. Chem.*, **22**(32), 16259, 2012.
- Yu-Hsun Lin, Te-Yu Wei, Hsing-Chi Chien, **Shih-Yuan Lu\***, "Manganese Oxide/Carbon Aerogel Composite: an Outstanding Supercapacitor Electrode Material," *Adv. Energy Mater.*, **1**(5), 901, 2011.

